Work-related Musculoskeletal Disorders of the Neck, Back, and Upper Extremity in Washington State, 1992-2000

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REPORT SUMMARY

Objectives This study examines the frequency, incidence rate (rate of new claims per 10,000 FTEs), cost, lost time and industry distribution of non-traumatic soft tissue musculoskeletal disorders in Washington State in order to help focus prevention efforts by business, labor and government.

Methods In the current study we examined State Fund workers compensation claims for general and selected specific hand/wrist, elbow, shoulder, neck and back disorders in 1992-2000. We examined the Self-Insured closed compensable (four or more lost workdays) claims data for general categories because diagnostic codes (ICD-9) were unavailable. We used a prevention index (PI) to rank industries by taking the average rank by incidence rate and rank by number of claims. The focus was on non-traumatic soft tissue musculoskeletal disorders (NTST-MSDs). These NTST-MSDs, when caused or aggravated by work activities, (for example, exposures to frequent or heavy manual handling, awkward postures, forceful or repetitive exertions) are referred to as Work-related MSDs or WMSDs. The lower extremity is not included in this report.

Results Between 1992-2000, there were 380,485 State Fund accepted claims for NTST-MSDs of the neck, back and upper extremity resulting in:

- $2.9 billion in direct costs
- 26.9% of all State Fund-accepted claims
- 41% of all lost-time compensable claims
- 32.4% were compensable (four or more lost workdays) versus 21.2% of all claims
- Average claims incidence rate (CIR) of 320.8 per 10,000 full-time equivalent employees (FTEs)
- Average compensable claims incidence rate of 103.2 per 10,000 FTEs
- Average of 123 lost time days per compensable claim
- 53.5% were claims for back disorders, 35% were for upper extremity disorders

The average number of State Fund NTST-MSD claims for the neck, back and upper extremity was 42,276 per year and averaged $7,758 per claim.

The claims incidence rate for NTST-MSDs decreased significantly (-3.8% per year) over the study period, primarily related to decreases in neck (-4.2% per year) and back (-4.4% per year). The CIR for upper extremity NTST-MSDs did not significantly decrease over the study period (-1.9% per year).

For the Self-Insured, coded data was available only for compensable closed claims (four or more lost workdays). There were 76,297 compensable closed NTST-MSD claims resulting in:

- Approximately 46.1% of all compensable closed claims

- Average compensable CIR of 152.9 per 10,000 FTEs
- 51.5% were back disorders and 35% were upper extremity disorders

The NTST-MSD compensable claims incidence rate for the Self-Insured decreased 2.9% per year ($p<0.06$) between 1992-1999, slightly more than for all other claims combined (1.7% per year).

We looked at several specific diagnostic codes (ICD-9) for NTST-MSDs in the State Fund and found:

For **sciatica**, there were 6,160 accepted claims and while infrequent (673 per year, CIR of 5.1 per 10,000 FTEs), they were extremely costly:

- $51,269 per claim on average
- 70.5% were compensable with an average time loss of 334.8 days
- The CIR increased 0.8% per year over the study period

For **rotator cuff syndrome**, there were 19,035 accepted claims (2,115 per year) with:

- An average CIR of 15.9 per 10,000 FTEs
- Average cost of $19,900 per claim
- 54.1% were compensable with an average time loss of 203.7 days
- The CIR increased 1.2% per year over the study period

For **epicondylitis**, there were 13,309 claims (1,479 per year) with:

- An average CIR of 11.1 per 10,000 FTEs
- Average cost of $8,658 per claim
- 47.5% were compensable with an average time loss of 182.7 days
- The CIR increased 0.2% per year over the study period

For **carpal tunnel syndrome**, there were 28,033 claims (3,115 per year) with:

- An average CIR of 23.6 per 10,000 FTEs
- Average direct cost of $15,616 per claim
- 56.6% were compensable
- Average time loss was 167.7 days
- The CIR decreased at about the same rate as all claims (-4.0% per year).

For **hand/wrist tendinitis**, there were 20,625 accepted claims (2,292) per year with:

- An average CIR of 17.3 per 10,000 FTEs
- Average cost of $8,905 per claim
- 36.3% were compensable with an average time loss of 163 days
- The CIR decreased -0.9% per year on average over the study period.

We used the Prevention Index (PI) to identify industries with the greatest impact of WMSDs. Industries are listed in rank order by the number of claims and by the rate of claims. The PI is the average of the two ranks for each industry. An industry therefore is high on the PI if it has a relatively high number of claims and a relatively high claims rate.

In the State Fund, Construction, Manufacturing and Transportation sectors ranked first, second and third on the PI. Among the Self-Insured, Transportation ranked first, followed by Retail Trade and Manufacturing, whereas Construction ranked 8th.

We calculated the PI for industries classified by their 3-digit SIC codes and also calculated a rate ratio for each industry by comparing the CIR for each

industry with the overall state CIR. A rate ratio of 3, for example, means that the rate for that industry is 3 times the overall state rate.

The top 12 industries for combined State Fund and Self-Insured compensable NTST-MSDs were:

1. **Trucking & Courier Services** (SIC 421) RR=3.0
2. **Transportation Scheduled & Air Courier Services** (SIC 451) RR=3.2
3. **Nursing & Personal Care Services** (SIC 805) RR=2.8
4. **Masonry, Stonework, Tile Setting & Plastering** (SIC 174) RR=2.9
5. **Roofing, Siding & Sheet Metal Work** (SIC 176) RR=3.4
6. **Grocery Stores** (SIC 541) RR=1.9
7. **Local & Suburban Passenger Transportation** (SIC 411) RR=2.6
8. **General Building Contractors-Residential Buildings** (SIC 152) RR=1.9
9. **Miscellaneous Special Trade Contractors** (SIC 179) RR=1.9
10. **Sawmills & Planing Mills** (SIC 242) RR=1.9
11. **Hospitals** (SIC 806) RR=1.7
12. **Services to Dwellings & Other Buildings** (SIC 734) RR=1.9

Since SIC codes are being replaced with NAICS (North American Industrial Classification System) codes, this is the second year we present summary data by NAICS as well.

We also looked at industry by using the Washington Industrial Classification (WIC) codes. These codes are used for industrial insurance purposes and they code industries by similar processes and exposures. While in general the results are similar to the SIC analysis, there are some high-risk industries not otherwise identified.

Top 12 Industries for NTST-MSDs by Prevention Index and Washington Industrial Classification (WIC)

Rank	State Fund WIC	Rate Ratio	Self-Insured Compensable WIC	Rate Ratio
1	6108 Nursing Homes	3.9	Parcel Package Delivery	5.0
2	0507 Roofing	5.1	Airlines, Ground Crews	4.8
3	2903 Wood Products Mfg	3.0	Bus Companies	3.4
4	0510 Wood Frame Bldg Const	2.9	Cities – All Other Employees	2.5
5	7114 Temp Help – Assembly	5.4	Schools – All Other Employees	2.5
6	6907 Moving Companies	5.0	Trucking	3.1
7	0308 Lawn Care Maintenance	3.3	Warehouses NOC	2.4
8	0518 Building Const NOC	3.0	Airlines, Flight Crews	4.5
9	4305 Garbage Collection	3.8	Temp Help – Admin Staff	16.9
10	2105 Beer Distributors	3.7	Supermarkets	1.8
11	1002 Sawmills	3.3	Wholesale Stores	2.5
12	Concrete Work – Foundations & Sidewalks	3.6	Janitorial Service	2.9

NOC = Not Otherwise Classified All Other Employees = Groundskeeping, Maintenance, etc.

Temp Help – Administrative in Self-Insured also has temporary assembly and machine operator claims.

As the report details, temporary help workers were at increased risk compared to overall industry for all NTST-MSDs, particularly temporary workers in assembly.

Conclusions Non-traumatic soft tissue musculoskeletal disorders continue to be a large and costly problem in Washington State. The incidence rates for some NTST-MSDs are decreasing; in some cases, the rate is stable (sciatica, hand/wrist tendinitis) or increasing (rotator cuff syndrome, epicondylitis). The highest risks are in industries characterized by manual handling and forceful repetitive exertions. The contingent workforce appears to be at particularly high risk.

These overall estimates of the burden of NTST-MSDs are most likely an underestimate because the lower extremity is not included, there is evidence of under-reporting of these kinds of disorders in the literature, and the indirect costs to the employer, employee and society are not included.